

PROGRESS OF MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

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THE REPORT OF THE HYDERABAD CHLOROFORM COMMISSION.

The second Hyderabad Chloroform Commission's report has just appeared in *The Lancet* of January 18th, and on account of the importance of the subject cannot fail to receive marked attention. The experiments, which were performed under the supervision of DR. LAUDER BRUNTON, were of two kinds, those of one group being made without recording apparatus, and being intended to ascertain what influence is exerted by various conditions upon the relation between the stoppage of heart and of respiration, and the limits within which artificial respiration and other means of resuscitation are useful. The second group consisted of experiments with recording apparatus, and were made for the purpose of ascertaining the effect of various conditions upon the heart and blood pressure. In the first group chloroform was given in all sorts of ways—alone or with morphine, atropine, and strychnine—to animals, healthy and diseased, fasting or replete. The result was invariable: in every case the respiration stopped before the heart, sometimes a long time before it. But the effect of partial asphyxia in causing the heart to stop very soon after the respiration is deserving of particular notice.

The second group of experiments on heart and blood pressure was made with apparatus arranged in such a way that the whole experiment could be recorded from beginning to end in such a compass as to admit of photographic reproduction in its entirety. This was managed by recording the general blood pressure on a slowly revolving drum, and taking at intervals a tracing on a second drum, revolving with sufficient rapidity to show each beat of the pulse. About one hundred and fifty experiments were made in this way, and the influence of everything that seemed likely to affect the blood pressure during chloroform narcosis was ascertained. Particular attention was directed to the production of shock or syncope, and to the

effect of chloroform itself on the heart and blood pressure in healthy animals, and also in cases where fatty degeneration of the heart and other organs had been produced by the previous administration of phosphorus. The results of these experiments were unexpected. It was found to be exceedingly difficult to affect the heart reflexly, and recourse was therefore had to direct stimulation of the vagus, by which the heart could be slowed or stopped completely. Instead of this causing the death of the animal, however, it appeared rather to be a safeguard, preventing the anæsthetic from being conveyed in too great quantities to the nerve centres.

From the report, it will be seen that the discrepancy between the views of different schools arises from the fact that sufficient consideration has not been given to the conditions under which the chloroform is given. Although it may paralyze the heart if applied directly to it, yet this condition does not occur in practice, for here it is neither applied to that organ nor yet is it blown forcibly into the lungs. It is inhaled by the patient, and when this is the case it stops the respiration before the heart. The practical outcome of the research would appear to be that deaths from chloroform are not inevitable; that they are therefore preventable, and by due care in its administration they may be with certainty avoided.

The following are the practical conclusions in detail which the Commission think may fairly be deduced from their experiments:

1. The recumbent position on the back and absolute freedom of respiration are essential.

2. If during the operation the recumbent position on the back cannot, from any cause, be maintained during chloroform administration, the utmost attention to the respiration is necessary to prevent asphyxia or an overdose. If there is any doubt whatever about the state of the respiration, the patient should be at once restored to the recumbent position on the back.

3. To insure absolute freedom of respiration, tight clothing of every kind, either on the neck, chest, or abdomen, is to be strictly avoided; and no assistants or bystanders should be allowed to exert pressure on any part of the patient's thorax or abdomen, even though the patient be struggling violently. If struggling does occur, it is always possible to hold the patient down by pressure on the shoulders, pelvis, or legs without doing anything which can by any possibility interfere with the free movements of respiration.

4. An apparatus is not essential, and ought not to be used, as, being made to fit the face, it must tend to produce a certain amount of asphyxia. Moreover, it is apt to take up part of the attention which is required elsewhere. In short, no matter how it is made, it introduces an element of danger into the administration. A convenient form of inhaler is an open cone or cap with a little absorbent cotton inside at the apex.

5. At the commencement of inhalation care should be taken, by not holding the cap too close over the mouth and nose, to avoid exciting struggling, or holding the breath. If struggling or holding the breath does occur, great care is necessary to avoid an overdose during the deep inspirations which follow. When quiet breathing is insured as the patient begins to go over, there is no reason why the inhaler should not be applied close to the face; and all that is then necessary is to watch the cornea and to see that the respiration is not interfered with.

6. In children, crying insures free admission of chloroform into the lungs: but as struggling and holding the breath can hardly be avoided, and one or two whiffs of chloroform may be sufficient to produce complete insensibility, they should always be allowed to inhale a little fresh air during the first deep inspirations which follow. In many struggling persons, but especially in children, it is essential to remove the inhaler after the first or second deep inspiration, as enough chloroform may have been inhaled to produce deep anæsthesia, and this may only appear, or may deepen, after the chloroform is stopped. Struggling is best avoided in adults by making them blow out hard after each inspiration during the inhalation.

7. The patient is, as a rule, anæsthetized and ready for the operation to be commenced when unconscious winking is no longer produced by touching the surface of the eye with the tip of the finger. The anæsthetic should never, under any circumstances, be pushed till the respiration stops; but when once the cornea is insensitive, the patient should be kept gently under by occasional inhalations, and not be allowed to come out and renew the stage of struggling and resistance.

8. As a rule, no operation should be commenced until the patient is fully under the influence of the anæsthetic, so as to avoid all chance of death from surgical shock or fright. .

9. The administrator should be guided as to the effect entirely by the respiration. His only object, while producing anæsthesia, is to see that the respiration is not interfered with.

10. If possible, the patient's chest and abdomen should be exposed during chloroform inhalation, so that the respiratory movements can be seen by the administrator. If anything interferes with the respiration in any way, however slightly, even if this occurs at the very commencement of the administration, if breath is held, or if there is stertor, the inhalation should be stopped until the breathing is natural again. This may sometimes create delay and inconvenience with inexperienced administrators, but experience will make any administrator so familiar with the respiratory functions under chloroform that he will in a short time know almost by intuition whether anything is going wrong, and be able to put it right without delay before any danger arises.

11. If the breathing becomes embarrassed, the lower jaw should be pulled, or pushed from behind the angles, forward, so that the lower teeth protrude in front of the upper. This raises the epiglottis and frees the larynx. At the same time it is well to assist the respiration artificially until the embarrassment passes off.

12. If by any accident the respiration stops, artificial respiration should be commenced at once, while an assistant lowers the head and draws forward the tongue with catch-forceps, by Howard's method, assisted by compression and relaxation of the thoracic walls. Artificial respiration should be continued until there is no doubt whatever that natural respiration is completely reestablished.

13. A small dose of morphine may be injected subcutaneously before chloroform inhalation, as it helps to keep the patient in a state of anæsthesia in prolonged operations. There is nothing to show that atropine does any

good in connection with the administration of chloroform, and it may do a very great deal of harm.

14. Alcohol may be given with advantage before operations under chloroform, provided it does not cause excitement, and merely has the effect of giving a patient confidence and steadying the circulation.

The Commission has no doubt whatever that if the above rules be followed, chloroform may be given in any case requiring an operation with perfect ease and absolute safety, so as to do good without the risk of evil.

A CLINICAL STUDY OF THE DIURETIC ACTION OF THEOBROMINE.

Until the researches of Schröder pointed out the diuretic action of caffeine and theobromine, we had no means of exciting the secretion of the kidneys in a way corresponding to the action of pilocarpine on the sweat and salivary glands. The two cases are not wholly parallel, for pilocarpine exerts its action on the glands through the nervous system, whereas caffeine and theobromine increase the renal secretions through an influence on the renal epithelium. Caffeine is not limited in its physiological effects to the kidneys, for it acts upon the nervous and circulatory systems as well. Upon the kidneys its effect may thus be a double one: first, to increase the amount of urine by exciting the renal epithelium, or, by contracting the renal vessels, diminish the blood supply and thus lessen the amount of urine. It is possible to counteract the stimulation of the vaso-motor centres and prevent the narrowing of the bloodvessels by the administration of chloral or paraldehyde: this may prove a dangerous procedure, as too large amounts are sometimes required.

DR. CHRISTIAN GRAM has made careful clinical observations with caffeine and paraldehyde, with theobromine, and with a compound of theobromine with sodium and salicylic acid, upon several cases, chiefly of chronic renal and cardiac disease.

The combination of paraldehyde with caffeine gave excellent results as a diuretic, thus affording a clinical confirmation of what v. Schröder has demonstrated physiologically. There are, however, certain drawbacks which make this method impractical. Paraldehyde is not well borne; it destroys the patient's appetite and may prove to be even dangerous.

Theobromine alone gave good results as a diuretic, but difficulties were also encountered here. Its insolubility made its absorption slow or impossible, and it readily excited vomiting. The next step was to find a soluble compound of theobromine, which was realized in the theobromine-sodio-salicylic compound: this contains almost exactly fifty per cent. of theobromine, dissolves in half its weight of warm water, and remains in solution on cooling. Theobromine requires 1000 parts of water to dissolve one part. The compound was always well borne, even by weak patients, and was readily absorbed. Theobromine is the active ingredient, since it gives rise to copious diuresis when it is absorbed, as indicated by its presence in the urine. The salicylate of sodium in this compound is probably not responsible for the diuretic action, since no diuresis follows the administration of salicylate of sodium when this is given first, while abundant flow of urine occurs after the administration of the compound with theobromine. Theobromine-sodio-

salicylate is harmless, and the usual dose for twenty-four hours is about a drachm and a half, given in single doses of fifteen grains each.—*Therapeutische Monatshefte*, January, 1890.

DIURETIN, A NEW DIURETIC.

The diuretic action of caffeine being open to the objection that it may be accompanied by sleeplessness and restlessness, it has occurred to DR. GRAM, of Copenhagen, to employ a sodio-salicylic compound of theobromine, to which he has given the name of "diuretin." Notwithstanding the strong resemblances between theobromine and caffeine, diuretin is alleged to produce strong diuretic action without in any way affecting the central nervous system, and to give satisfactory diuresis in cases of renal cardiac dropsy in which digitalis and strophanthus have been inoperative.—*Lancet*, January 4, 1890.

THE SUBCUTANEOUS ADMINISTRATION OF IRON

PROF. ROSENTHAL, of Vienna, states that this method is advantageous in the cases of delicate neurasthenic persons who suffer, as such often do, from atonic dyspepsia. Here even small doses of iron, taken by the mouth, will sometimes produce disorder of the stomach. In severer forms of disease, such as pernicious anæmia, malarial cachexia, and the graver forms of leukæmia, there does not appear to be any advantage in the employment of the hypodermic method of administering iron. Two new preparations are recommended by Prof. Rosenthal for hypodermic use—viz., the peptonate and the oleate of iron. He states that he has never seen any bad results follow subcutaneous injections of iron preparations, and he explains the fatal consequences that have occasionally been reported as following injections into vascular tumors of the head, by the fact that the vessels composing such tumors are generally closely connected with the veins of the dura mater. He has frequently seen venous enlargements in the legs undergo shrinking after being injected with dilute perchloride of iron, no dangerous symptoms ever ensuing.—*Lancet*, December 14, 1889.

ACTION OF TINCTURE OF IODINE IN RELIEVING VOMITING.

This is by no means a new treatment for vomiting, but as one of the remedies at our service, when less irritating means fail, it deserves remembrance and has undoubted value. Nineteen cases of vomiting from various causes were treated with much success in the service of DR. ROQUES. Among them were eleven cases of vomiting in patients with phthisis. In this disease tincture of iodine is of most service where the disease is not too far advanced, and in those suffering from dyspepsia in the early stages of tuberculosis. The attacks are aborted or reduced in frequency. Most of the patients took the drug readily; it was administered in water well diluted—ten drops in four ounces of water, taken in three portions, after meals. Its ingestion was usually followed by a sensation of warmth in the stomach, as if a glass of strong liquor had been taken, which lasted from five to twenty minutes. The disadvantage of this treatment is that in a certain number of cases

iodism is brought on, a result which depends more on the susceptibility of the patient than upon the dose of the drug. These symptoms disappear quickly after stopping its administration.—*L'Union Médicale*, December 10 1889.

HYPNOTISM IN THERAPEUTICS WITHOUT SUGGESTION.

During a recent visit to Paris PROF. WOOD spent some time studying the results obtained by certain physicians who have much faith in hypnotism.

The accepted theory, stated in a few words, is: that suggestions made during the hypnotic state are capable, not only of affecting the actions of the individual during the hypnotism, but also of affecting the functions of organic life so as to alter a diseased process without the patient being conscious that any suggestion has been made.

On his return Prof. Wood determined to try the therapeutic effect of hypnosis without suggestion. Two cases were selected: one with tremors simulating those of paralysis agitans; the other, a sufferer from paraplegia.

The history of the tremors case was that some years previously the woman had been attacked by tremors like those now present, but had recovered after three years' illness; that about three months before entering the ward of the hospital the tremors had returned. They had stopped at one time for two weeks, but when the case was taken in charge they were continuous in one arm, and exactly simulated those of true paralysis agitans. This woman was found to be a good subject for hypnosis. The tremors continued during the hypnotic sleep. No hypnotic suggestions whatever were made to her, but the second treatment was followed by great lessening of the tremors, and four treatments sufficed for a cure.

In the second case the paralysis of the legs was almost complete, associated with irregular patches of anæsthesia on the legs, absolute loss of the patellar reflexes, and great complaint of weakness and numbness in the arms. The woman had not the appearance of being hysterical, but the diagnosis of hysterical paraplegia had been made by Dr. Dercum. The ordinary treatment had been instituted without avail. During the hypnotic treatment no suggestions were made to the patient. After the second *séance* the numbness disappeared from the arms; after the third the woman was able to stand; after the fifth she could walk; after eight treatments she was able to walk long distances, stand very well on one leg, and was about to go from the hospital as cured, although her knee-jerks had not returned.

Dr. Wood does not commit himself to any theory as to the method in which hypnosis produces cure, although as yet he does not see why all the effects obtained cannot be accounted for on the theory of mental influence. For the exertion of such influence it is not essential that the physician should speak to the patient specifically about his or her case; especially is this true at the Paris and Nancy Clinics, since the whole atmosphere is heavy with faith. The patients come to be cured of their diseases; they undergo a process which to the ignorant is most mysterious, and which even educated people must, until they are accustomed to it, look upon as "uncanny." The elements of profound mental impression are all present, and it needs no words of the physician to bring them into action.—*Lancet*, January 11, 1890.

THE THERAPEUTIC VALUE OF SENNA-PODS.

MR. E. F. SALMON has found that the senna-pods are richer than the leaves in cathartin, the active principle of senna, which is a combination of cathartic and phosphoric acids with a magnesium and calcium base, while, in addition to cathartin, there is found in the leaves a volatile oil which is absent in the pods. It is, therefore, on this account that the pods are free from nauseous taste, and are less likely than the leaves to cause griping pains. Treatment with alcohol removes the resinous and odorous principles to which the griping and nauseous taste are due, and will leave the cathartin unchanged. Cold water, on the other hand, readily dissolves the cathartin from the pod, while the cathartin from the leaf, owing to the impervious nature of its epidermis, is insoluble in water. Accordingly Mr. Salmon recommends cold water as the best menstruum for the preparation of a fluid extract. For one pound of pods six pints of cold distilled water for the first and about three pints for the second maceration is a sufficient quantity to use. The fluid extract is tasteless, and in doses of from one-half to two fluidrachms will almost invariably produce purgation.—*Therapeutic Gazette*, Jan. 1890.

CAUTION REGARDING THE EXTRACT OF MALE-FERN.

A Bohemian practitioner mentions a case where, having administered two drachms of extract of male-fern in gelatin capsules, followed by castor oil, which had brought away a considerable length of worm, he was somewhat surprised to be aroused at five o'clock on the second morning to go to the patient, who had just had a violent rigor, and was at that time feverish and suffering great pain in the abdomen, with diarrhoea and constant vomiting. The temperature was 103° F, and the stools presented the characteristic odor of male-fern. For these symptoms ice and morphine were prescribed, by which means the sickness was controlled, but the intestinal catarrh required treatment for several days. The writer came to the conclusion that the explanation of the late appearance of the symptoms was due to the fact that the extract in the capsules had become inspissated, and, therefore, difficult of solution in the juices of the stomach. Some little time later he gave the same patient a drachm and a half of the extract in the fluid form, and succeeded in bringing away the whole of the worm without causing any disagreeable symptoms.—*Lancet*, January 4, 1890.

STROPHANTHUS AS A REMEDY FOR YOUNG CHILDREN.

After a study of the action of this remedy in young children, PROFESSOR MONCORVO, of Rio Janeiro, believes that it possesses special advantages in these cases. As a cardiac tonic and as a diuretic it is undoubtedly of especial value, not only on account of its prompt action but because it is harmless even to very young patients.

In the pulmonary or broncho-pulmonary affections of children, often complicated with cardiac insufficiency, strophanthus may be of much service.

The action of strophanthus does not seem to be a transitory one, for in a certain number of these little patients the good results brought about by it

persisted for a long time after the drug had been given up. Further, it has no action on the nervous system or on the temperature.

A dilute tincture of strophanthus (1 to 20) was used, and the dose varied between four and eighteen drops in twenty-four hours, according to the condition and age of the patient.—*L'Union Médicale*, January 9, 1890.

PHENYLURETHANE, A NEW ANTIPYRETIC.

A new antipyretic, which is said to combine antirheumatic and analgesic properties, has been introduced under the name of "phenylurethane," by PROFESSOR GIACOMINI. It is a compound belonging to the aromatic group, resulting from the combination of aniline with chloro-carbonic ethyl ether. It is a white crystalline powder, insoluble in water, but freely soluble in concentrated alcohol. That its employment is not altogether free from anxiety may be gathered from the recommendation to administer it as a solution in Marsala wine, which is said to prevent collapse, cyanosis, and other unpleasant symptoms. On the other hand, it is claimed to be an energetic and certain antipyretic. For the relief of the pain and swelling of acute and chronic articular rheumatism it has been employed with advantage in doses of seven grains and a half. As an analgesic it is not so certain in its effects, acting beneficially in some cases, whilst in others the result is negative. A dose of seven and a half grains is said to be equivalent to fifteen grains of antipyrin. It is obviously a remedy which will require to be used with caution, both from its composition and from the marked resemblance its actions bear to those of pyrocin.—*Lancet*, January 4, 1890.

A NEW SOLVENT FOR THERAPEUTICAL PURPOSES.

Sulpholinic acid, obtained by the action of sulphuric acid on certain vegetable oils, appears in its concentrated form as a yellowish liquid with a neutral reaction, and having a taste at first sweet and then bitter and astringent. When heated it dissolves numerous organic and inorganic substances, such as sulphur (2 per cent.), iodoform (3 per cent.), camphor (25 per cent.), naphthaline, chrysophanic acid, and coloring matters. These solutions readily penetrate the skin, which completely and rapidly absorbs them. As a vehicle for external applications it seems more generally useful than vaseline, oleic acid, or glycerin.—*Journ. de Méd. de Paris*, 1889.

THE VALUE OF LARGE SUBCUTANEOUS INJECTIONS OF SALT SOLUTION.

VON MÜNCHMYER, of Dresden, reports eight cases of hemorrhage, seven of them in confinement, which were successfully treated by the subcutaneous injection of a six-tenths of one per cent. salt solution.

A rather large-sized hollow needle is sterilized by heating it over an alcohol flame, and the rubber tube and funnel, or irrigator, are disinfected with a five per cent. solution of carbolic acid, directly after which the apparatus is filled with the salt solution. One to two pints of the solution, at a temperature of 37° C., are injected into the back, between the scapulæ, or near the axillæ, at one or several points.

The absorption and distribution of the solution are promoted by massage of the part.

This method is less dangerous than transfusion, and is comparatively painless.—*Therapeutische Monatshefte*, October, 1889.

MEDICINE.

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EPIDEMIC INFLUENZA.

NOTHNAGEL (*Wiener med. Presse*, 1890, No. 1, 25) is of the opinion that influenza is a bacterial disease; for although the actual proof of this—the finding of the specific organism—has not yet been offered, yet its clinical course and its epidemic character mark it as a typical infectious disease, such as is caused by the entrance of a microorganism into the system. It is undoubtedly not the microbe, but the toxin produced by it, which produces the symptoms.

The clinical characters of influenza may be at times so different that the belief could be entertained that we had to do with different diseases. In typhoid fever there may be a cerebral typhoid, a pneumo-typhoid, a nephro-typhoid, and the typhoid with abdominal symptoms. It is always the same poison, which probably attacks the organ possessing the least power of resistance. The same is true of influenza, and it is the author's opinion that the influenza poison may act upon different organs, and occasion different symptoms in different cases.

In nearly all cases this poison produces fever, which varies as regards its duration and character. There are isolated and rare instances in which influenza was unaccompanied by fever. Next to the fever the most important symptoms are affections of the respiratory apparatus. After these are disorders of the nervous system (headache, sleeplessness, neuralgia, muscular pains). The author has observed some cases which afford convincing proof of the analogy of influenza to other infectious diseases. After such affections, namely, there are often evidences of motor and sensory irritation or paralysis; and he has seen cases of influenza in which, after the disease had passed, neuralgias, especially trigeminal, remained. A third department of the economy, the digestive tract, is attacked by influenza with relative frequency (loss of appetite, vomiting, diarrhœa).

In many cases, still other symptoms make their appearance; such as